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22203, <http://www.ari.org/>. You can purchase a copy of the ISO Standard 13256–1 from the International Organization for Standardization, Case Postale 56, CH–1211, Geneva 20, Switzerland. <http://www.iso.ch/> or from the American National Standards Institute, 25 West 43rd Street, New York, New York 10036.

[69 FR 61969, Oct. 21, 2004, as amended at 71 FR 71370, Dec. 8, 2006]

**§ 431.96 Uniform test method for the measurement of energy efficiency of small, large, and very large commercial package air conditioning and heating equipment, packaged terminal air conditioners, and packaged terminal heat pumps.**

(a) *Scope.* This section contains test procedures for measuring, pursuant to

EPCA, the energy efficiency of any small, large, or very large commercial package air-conditioning and heating equipment, packaged terminal air conditioner, or packaged terminal heat pump.

(b) *Testing and calculations.* Determine the energy efficiency of each covered product by conducting the test procedure(s) listed in the rightmost column of Table 1 of this section, that apply to the energy efficiency descriptor for that product, category, and cooling capacity.

TABLE 1 TO § 431.96—TEST PROCEDURES FOR ALL SMALL COMMERCIAL PACKAGE AIR-CONDITIONING AND HEATING EQUIPMENT, FOR LARGE COMMERCIAL PACKAGE AIR-CONDITIONING AND HEATING EQUIPMENT, FOR VERY LARGE COMMERCIAL PACKAGE AIR-CONDITIONING AND HEATING EQUIPMENT, AND FOR PACKAGED TERMINAL AIR-CONDITIONERS, AND PACKAGED TERMINAL HEAT PUMPS

Product	Category	Cooling capacity	Energy efficiency descriptor	Use tests, conditions and procedures <sup>1</sup> in
Small Commercial Packaged Air Conditioning and Heating Equipment.	Air Cooled, 3 Phase, AC and HP.	<65,000 Btu/h ...	SEER ..... HSPF .....	ARI Standard 210/240–2003. ARI Standard 210/240–2003.
	Air Cooled AC and HP.	≥65,000 Btu/h and <135,000 Btu/h	EER ..... COP .....	ARI Standard 340/360–2004. ARI Standard 340/360–2004.
	Water Cooled and Evaporatively Cooled AC.	<65,000 Btu/h ... ≥65,000 Btu/h and <135,000 Btu/h.	EER ..... EER .....	ARI Standard 210/240–2003. ARI Standard 340/360–2004.
	Water-Source HP.	<135,000 Btu/h	EER ..... COP .....	ISO Standard 13256–1 (1998). ISO Standard 13256–1 (1998).
Large Commercial Packaged Air-Conditioning and Heating Equipment.	Air Cooled AC and HP.	≥135,000 Btu/h and <240,000 Btu/h.	EER ..... COP .....	ARI Standard 340/360–2004. ARI Standard 340/360–2004.
	Water Cooled AC.	≥135,000 Btu/h and <240,000 Btu/h.	EER .....	ARI Standard 340/360–2004.
	Evaporatively Cooled AC.	≥135,000 Btu/h and <240,000 Btu/h.	EER .....	ARI Standard 340/360–2004.
Very Large Commercial Packaged Air-Conditioning and Heating Equipment.	Air Cooled AC and HP.	≥240,000 Btu/h and <760,000 Btu/h.	EER ..... COP .....	ARI Standard 340/360–2004. ARI Standard 340/360–2004.
Packaged Terminal Air-Conditioners and Heat Pumps.	AC and HP ..... HP .....	All ..... All .....	EER ..... COP .....	ARI Standard 310/380–2004. ARI Standard 310/380–2004.

<sup>1</sup> Incorporated by reference, see § 431.95.

[71 FR 73170, Dec. 8, 2006]

ENERGY EFFICIENCY STANDARDS

**§ 431.97 Energy efficiency standards and their effective dates.**

(a) All small or large commercial package air conditioning and heating

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equipment manufactured on or after January 1, 1994 (except for large commercial package air-conditioning and heating equipment, for which the effective date is January 1, 1995), and before January 1, 2010, in the case of the air-cooled equipment covered by the standards in paragraph (b), must meet the applicable minimum energy efficiency standard level(s) set forth in Tables 1 and 2 of this section. Each standard size packaged terminal air conditioner or packaged terminal heat pump manu-

factured on or after January 1, 1994, and before September 30, 2012, must meet the applicable minimum energy efficiency standard level(s) set forth in Tables 1 and 2 of this section. Each non-standard size packaged terminal air conditioner or packaged terminal heat pump manufactured on or after January 1, 1994, and before September 30, 2010, must meet the applicable minimum energy efficiency standard level(s) set forth in Tables 1 and 2 of this section.

TABLE 1 TO § 431.97—MINIMUM COOLING EFFICIENCY LEVELS

Product	Category	Cooling capacity	Sub-category	Efficiency level <sup>1</sup>	
				Products manufactured until October 29, 2003	Products manufactured on and after October 29, 2003
Small Commercial Packaged Air Conditioning and Heating Equipment.	Air Cooled, 3 Phase.	<65,000 Btu/h .....	Split System .....	SEER = 10.0 .....	SEER = 10.0.
			Single Package ....	SEER = 9.7 .....	SEER = 9.7.
	Air Cooled .....	≥65,000 Btu/h and <135,000 Btu/h.	All .....	EER = 8.9 .....	EER = 8.9.
	Water Cooled, Evaporatively Cooled, and Water-Source.	<17,000 Btu/h .....	AC .....	EER = 9.3 .....	EER = 12.1.
Large Commercial Packaged Air Conditioning and Heating Equipment.			HP .....	EER = 9.3 .....	EER = 11.2.
		≥17,000 Btu/h and <65,000 Btu/h.	AC .....	EER = 9.3 .....	EER = 12.1.
			HP .....	EER = 9.3 .....	EER = 12.0.
		≥65,000 Btu/h and <135,000 Btu/h.	AC .....	EER = 10.5 .....	EER = 11.5. <sup>2</sup>
			HP .....	EER = 10.5 .....	EER = 12.0.
	Air Cooled .....	≥135,000 Btu/h and <240,000 Btu/h.	All .....	EER = 8.5 .....	EER = 8.5.
Packaged Terminal Air Conditioners and Heat Pumps.	Water-Cooled and Evaporatively Cooled.	≥135,000 Btu/h and <240,000 Btu/h.	All .....	EER = 9.6 .....	EER = 9.6. <sup>3</sup>
	All .....	<7,000 Btu/h .....	All .....	EER = 8.88 .....	EER = 8.88.
		≥7,000 Btu/h and ≤15,000 Btu/h.	.....	EER = 10.0 – (0.16 × capacity [in kBtu/h at 95 °F outdoor dry-bulb temperature]).	EER = 10.0 – (0.16 × capacity [in kBtu/h at 95 °F outdoor dry-bulb temperature]).
		>15,000 Btu/h .....	.....	EER = 7.6 .....	EER = 7.6.

<sup>1</sup> For equipment rated according to the ARI standards, all EER values must be rated at 95 °F outdoor dry-bulb temperature for air-cooled products and evaporatively cooled products and at 85 °F entering water temperature for water-cooled products. For water-source heat pumps rated according to the ISO standard, EER must be rated at 30 °C (86 °F) entering water temperature.

<sup>2</sup> Deduct 0.2 from the required EER for units with heating sections other than electric resistance heat.

<sup>3</sup> Effective 10/29/2004, the minimum value became EER = 11.0.

TABLE 2 TO § 431.97—MINIMUM HEATING EFFICIENCY LEVELS

Product	Category	Cooling capacity	Sub-category	Efficiency level <sup>1</sup>	
				Products manufactured until October 29, 2003	Products manufactured on and after October 29, 2003
Small Commercial Packaged Air Conditioning and Heating Equipment.	Air Cooled, 3 Phase.	<65,000 Btu/h .....	Split System .....	HSPF = 6.8 .....	HSPF = 6.8.
			Single Package ....	HSPF = 6.6 .....	HSPF = 6.6.

TABLE 2 TO § 431.97—MINIMUM HEATING EFFICIENCY LEVELS—Continued

Product	Category	Cooling capacity	Sub-category	Efficiency level <sup>1</sup>	
				Products manufactured until October 29, 2003	Products manufactured on and after October 29, 2003
Large Commercial Packaged Air Conditioning and Heating Equipment. Packaged Terminal Heat Pumps.	Water-Source .....	<135,000 Btu/h ....	Split System and Single Package.	COP = 3.8 .....	COP = 4.2.
	Air Cooled .....	≥65,000 Btu/h and <135,000 Btu/h.	All .....	COP = 3.0 .....	COP = 3.0.
	Air Cooled .....	≥135,000 Btu/h and <240,000 Btu/h.	Split System and Single Package.	COP = 2.9 .....	COP = 2.9.
	All .....	All .....	All .....	COP = 1.3 + (0.16 × the applicable minimum cooling EER prescribed in Table 1—Minimum Cooling Efficiency Levels).	COP = 1.3 + (0.16 × the applicable minimum cooling EER prescribed in Table 1—Minimum Cooling Efficiency Levels).

<sup>1</sup> For units tested by ARI standards, all COP values must be rated at 47 °F outdoor dry-bulb temperature for air-cooled products, and at 70 °F entering water temperature for water-source heat pumps. For heat pumps tested by the ISO Standard 13256–1, the COP values must be obtained at the rating point with 20 °C (68 °F) entering water temperature.

(b) Air-cooled commercial package air-conditioning and heating equipment manufactured on or after January 1, 2010, with cooling capacities equal to or greater than 65,000 Btu/h and less than 760,000 Btu/h, shall have Energy Efficiency Ratio and Coefficient of Performance no less than:

Product	Cooling capacity (Btu/h)	Category	Efficiency level†
Small commercial package air-conditioning and heating equipment (air-cooled).	≥65,000 and <135,000 .....	AC .....	EER = 11.2* EER = 11.0**
		HP .....	EER = 11.0* EER = 10.8**
Large commercial package air-conditioning and heating equipment (air-cooled).	≥135,000 and <240,000 .....	AC .....	EER = 11.0* EER = 10.8**
		HP .....	EER = 10.6* EER = 10.4**
Very large commercial package air-conditioning and heating equipment (air-cooled).	≥ 240,000 and <760,000 .....	AC .....	EER = 10.0* EER = 9.8**
		HP .....	EER = 9.5* EER = 9.3**
Small commercial package air-conditioning heat pump.	≥65,000 and <135,000 .....	HP .....	COP = 3.3
Large commercial package air-conditioning heat pump.	≥135,000 and <240,000 .....	HP .....	COP = 3.2
Very large commercial package air-conditioning heat pump.	≥ 240,000 and <760,000 .....	HP .....	COP = 3.2

\* This EER level applies to equipment that has electric resistance heat or no heating.

\*\* This EER level applies to equipment with all other heating-system types that are integrated into the unitary equipment.

† EER at a standard temperature rating of 95 °F dry-bulb and COP at a high temperature rating of 47 °F dry-bulb.

(c) Each standard size packaged terminal air conditioner or packaged terminal heat pump manufactured on or after September 30, 2012 and each non-standard size packaged terminal air conditioner or packaged terminal heat pump manufactured on or after September 30, 2010, shall have an Energy Efficiency Ratio and Coefficient of Performance no less than:

Equipment class			Energy conservation standards *
Equipment	Category	Cooling capacity (British thermal units per hour [Btu/h])	
PTAC .....	Standard Size .....	<7,000 .....	EER = 11.7
		7,000–15,000 .....	EER = $13.8 - (0.300 \times \text{Cap}^{**})$
		>15,000 .....	EER = 9.3
	Non-Standard Size .....	<7,000 .....	EER = 9.4
		7,000–15,000 .....	EER = $10.9 - (0.213 \times \text{Cap}^{**})$
		>15,000 .....	EER = 7.7
PTHP .....	Standard Size .....	<7,000 .....	EER = 11.9
		7,000–15,000 .....	COP = 3.3
		>15,000 .....	EER = $14.0 - (0.300 \times \text{Cap}^{**})$
			COP = $3.7 - (0.052 \times \text{Cap}^{**})$
			EER = 9.5
			COP = 2.9
	Non-Standard Size .....	<7,000 .....	EER = 9.3
		7,000–15,000 .....	COP = 2.7
		>15,000 .....	EER = $10.8 - (0.213 \times \text{Cap}^{**})$
			COP = $2.9 - (0.026 \times \text{Cap}^{**})$
			EER = 7.6
			COP = 2.5

\* For equipment rated according to the DOE test procedure, all EER values must be rated at 95 °F outdoor dry-bulb temperature for air-cooled products and evaporatively-cooled products and at 85 °F entering water temperature for water cooled products. All COP values must be rated at 47 °F outdoor dry-bulb temperature for air-cooled products, and at 70 °F entering water temperature for water-source heat pumps.

\*\* Cap means cooling capacity in thousand British thermal units per hour (Btu/h) at 95 °F outdoor dry-bulb temperature.

[69 FR 61969, Oct. 21, 2004, as amended at 70 FR 60415, Oct. 18, 2005; 70 FR 61698, Oct. 25, 2005; 71 FR 71371, Dec. 8, 2006; 73 FR 58828, Oct. 7, 2008]

### Subpart G—Commercial Water Heaters, Hot Water Supply Boilers and Unfired Hot Water Storage Tanks

SOURCE: 69 FR 61983, Oct. 21, 2004, unless otherwise noted.

#### § 431.101 Purpose and scope.

This subpart contains energy conservation requirements for certain commercial water heaters, hot water supply boilers and unfired hot water storage tanks, pursuant to Part C of Title III of the Energy Policy and Conservation Act, as amended, 42 U.S.C. 6311–6317.

[69 FR 61983, Oct. 21, 2004, as amended at 70 FR 60415, Oct. 18, 2005]

#### § 431.102 Definitions concerning commercial water heaters, hot water supply boilers, and unfired hot water storage tanks.

The following definitions apply for purposes of this subpart G, and of subparts J through M of this part. Any words or terms not defined in this section or elsewhere in this part shall be

defined as provided in section 340 of the Act, 42 U.S.C. 6311.

*ASTM-D-2156-80* means the test standard published in 1980 by the American Society of Testing and Measurements and titled Method for Smoke Density in Flue Gases from Burning Distillate Fuels.

*Hot water supply boiler* means a packaged boiler that is industrial equipment and that,

(1) Has an input rating from 300,000 Btu/hr to 12,500,000 Btu/hr and of at least 4,000 Btu/hr per gallon of stored water,

(2) Is suitable for heating potable water, and

(3) Meets either or both of the following conditions:

(i) It has the temperature and pressure controls necessary for heating potable water for purposes other than space heating, or

(ii) The manufacturer's product literature, product markings, product marketing, or product installation and operation instructions indicate that the boiler's intended uses include heating potable water for purposes other than space heating.

*Instantaneous water heater* means a water heater that has an input rating not less than 4,000 Btu/hr per gallon of stored water, and that is industrial equipment, including products meeting